March 28, 2005

Mr. L. William Pearce
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2) - REQUEST FOR ADDITIONAL INFORMATION (RAI) - CONTAINMENT CONVERSION FROM SUBATMOSPHERIC TO ATMOSPHERIC CONDITIONS (TAC NOS. MC3394 AND MC3395)

Dear Mr. Pearce:

The Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in your June 2, 2004, as supplemented February 11, 2005, license amendment application to approve operation of the BVPS-1 and 2 containments at atmospheric conditions. The NRC staff has determined that the additional information contained in the enclosure to this letter is needed to complete its review. As discussed with your staff, we request your response within 45 days of receipt of this letter, in order for the NRC staff to complete its scheduled review of your submittal.

Sincerely,

/RA/

Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure: RAI

cc w/encl: See next page

March 28, 2005

Mr. L. William Pearce
Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077

SUBJECT: BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2) - REQUEST FOR ADDITIONAL INFORMATION (RAI) - CONTAINMENT CONVERSION FROM SUBATMOSPHERIC TO ATMOSPHERIC CONDITIONS (TAC NOS. MC3394 AND MC3395)

Dear Mr. Pearce:

The Nuclear Regulatory Commission (NRC) staff has reviewed the information provided in your June 2, 2004, as supplemented February 11, 2005, license amendment application to approve operation of the BVPS-1 and 2 containments at atmospheric conditions. The NRC staff has determined that the additional information contained in the enclosure to this letter is needed to complete its review. As discussed with your staff, we request your response within 45 days of receipt of this letter, in order for the NRC staff to complete its scheduled review of your submittal.

Sincerely,
/RA/
Timothy G. Colburn, Senior Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-334 and 50-412

Enclosure: RAI

cc w/encl: See next page
DISTRIBUTION:

PUBLIC	MO'Brien	ACRS	PDI-1 R/F	TColburn	LWard
OGC	RLaufer	GMatakas, RGN-I	RLobel	RDennig	FAkstulewicz
DLPM/DPR					

ACCESSION NO. ML050810002

OFFICE	PDI-1/PM	PDI-2/LA	SPSB/SC	SRXB/SC	PDI-1/SC
NAME	TColburn	MO'Brien	RDennig	FAkstulewicz	RLaufer
DATE	3/24/05	3/24/05	3/24/05	3/24/05	3/24/05

OFFICIAL RECORD COPY

REQUEST FOR ADDITIONAL INFORMATION (RAI)

RELATED TO FIRSTENERGY NUCLEAR OPERATING COMPANY (FENOC)

BEAVER VALLEY POWER STATION, UNIT NOS. 1 AND 2 (BVPS-1 AND 2)

CONTAINMENT CONVERSION TO ATMOSPHERIC CONDITIONS

DOCKET NOS. 50-334 AND 50-412

By letter dated June 2, 2004, as supplemented February 11, 2005, FENOC (the licensee) proposed changes to BVPS-1 and 2 Technical Specifications (TSs) to allow operation of the containments at atmospheric conditions. The BVPS-1 and 2 containments are currently operated at subatmospheric conditions. In order for the Nuclear Regulatory Commission (NRC) staff to proceed with its review of the proposed change, the following information is needed. References to the February 11, 2005, RAI questions are underlined.

1. Describe the procedure and methods used to calculate the inadvertent spray event. Specify whether there has been any change in these methods for the containment conversion or the use of the MAAP-DBA computer code.

2. Do any of the emergency core cooling system (ECCS) or recirculation spray (RS) pumps currently take credit for operation with cavitation for some amount of time when required to mitigate a design-basis accident? A November 17, 1977, Duquesne Light report (Agencywide Documents Access and Management System, Legacy Library Accession No. 8710260129) describing changes to the BVPS-1 recirculation spray and low-head safety injection (LHSI) systems states (page 1-1) that the results of tests at reduced net positive suction head (NPSH) conditions provide the basis for the modifications described in the report. However, there have been several revisions to the NPSH analyses for BVPS-1 since this report.

   Do the analyses done for the containment conversion, at current power or power uprate conditions, require credit for operation of LHSI or RS pumps in cavitation? If so, are the previous tests cited in the November 17, 1977, report (which references an earlier September 9, 1977, report) still applicable?

   Please provide curves of available NPSH as a function of time for the limiting sequences. Also provide the required NPSH values used in the analyses.

3. Response to RAI 2.

   (a) The response to RAI 2 states:

      The confirmation of the interface between these two models [Westinghouse-1979 and MAAP-DBA] includes the ECCS recrculation time and the recirculation temperature and the steam generator (SG) depressurization points (pressure and time). It is confirmed

ENCLOSURE

that the 1979 Model uses an earlier switchover time, a hotter recirculation temperature, and a quicker SG depressurization than predicted by MAAP-DBA.

Since the earlier switchover time, the hotter recirculation temperature and the quicker depressurization are more conservative, why does the fact that the value of these parameters is more conservative with the Westinghouse-1979 model demonstrate the acceptability of MAAP-DBA?

(b) Provide the following information in order for the NRC staff to perform an independent analysis of the mass and energy release from a loss-of-coolant accident (LOCA) after 1 hour for an NPSH analysis.

1) refueling water storage tank (RWST) capacity and temperature
2) break size, location and discharge coefficient
3) flow rates or pump curves for pumps operating during the injection and recirculation phases
4) time until recirculation
5) earliest time to switch to simultaneous injection (does this affect NPSH?)
6) decay heat curve and multiplier
7) all pumped injection head flow curves (plus uncertainty on head and flow)
8) accumulator temperature
9) sump temperature vs time
10) Was superheat of the primary steam by the steam generator secondaries included in the calculations? If not, please explain.
11) Was entrainment of liquid into the SGs simulated along with the attendant additional steam source to the containment? If not, please explain.
12) Please describe how the mixing in the ECC injection sections was modeled. Was the break placed upstream or down stream of the ECC injection nozzle and please justify the chosen configuration?
13) Did the analysis include injection of the nitrogen into the containment?
14) containment pressure as a function of time

4. <u>Response to RAI 20</u>: Provide a Figure 2 comparing the MAAP-DBA and NOTRUMP mixture levels for a 2-inch and a 6-inch break.

5. <u>Response to RAI 20</u>: Explain why the limiting recirculation pump available NPSH conditions are calculated for the small-break LOCA rather than the large-break LOCA. This does not appear to have been the case with previous BVPS-1 and 2 NPSH calculations?

6. <u>Table 4-3, Enclosure 2</u>: (a) In calculating available NPSH, please explain why a maximum containment volume is used for the LHSI pumps and a minimum volume for the RS pumps. (b) Similarly, please explain the application of maximum and minimum values for the Hi-Hi quench spray setpoint, start delay for quench spray, quench spray flow rate, start delay for recirculation spray, heat exchanger (HX) UA, recirculating spray flow rate and HX cooling water temperature. Provide physical explanations, if possible.

7. <u>Response to RAI 26</u>: Provide results of a sensitivity of containment peak pressure and temperature to the model of the energy exchange between the water on the containment

floor and the containment atmosphere.

8. Table 4-3, Enclosure 2: (a) For several containment analysis input values (e.g., initial containment pressure, initial containment temperature and service water temperature) the value used in the safety analysis is the same as the TS value. How is measurement uncertainty accounted for? (b) How is measurement uncertainty accounted for in the values of safety analysis input parameters that are not in the TSs (e.g., RWST temperature, recirculation heat exchanger flow rate, quench spray flow rate)?

9. Table 4-3, Enclosure 2: The value of accumulator pressure used in the mass and energy release analyses is less than the range of TS values. Explain why this is conservative.

Beaver Valley Power Station, Unit Nos. 1 and 2

cc:

Mary O'Reilly, Attorney
FirstEnergy Nuclear Operating Company
FirstEnergy Corporation
76 South Main Street
Akron, OH 44308

FirstEnergy Nuclear Operating Company
Regulatory Affairs/Performance
Improvement
Larry R. Freeland, Manager
Beaver Valley Power Station
Post Office Box 4, BV-A
Shippingport, PA 15077

Commissioner James R. Lewis
West Virginia Division of Labor
749-B, Building No. 6
Capitol Complex
Charleston, WV 25305

Director, Utilities Department
Public Utilities Commission
180 East Broad Street
Columbus, OH 43266-0573

Director, Pennsylvania Emergency
  Management Agency
2605 Interstate Dr.
Harrisburg, PA 17110-9364

Ohio EPA-DERR
ATTN: Zack A. Clayton
Post Office Box 1049
Columbus, OH 43266-0149

Dr. Judith Johnsrud
National Energy Committee
Sierra Club
433 Orlando Avenue
State College, PA 16803

J. H. Lash, Plant Manager (BV-IPAB)
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, PA 15077
Rich Janati, Chief
Division of Nuclear Safety
Bureau of Radiation Protection
Department of Environmental Protection
Rachel Carson State Office Building
P.O. Box 8469
Harrisburg, PA 17105-8469

Mayor of the Borough of Shippingport
P O Box 3
Shippingport, PA 15077

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Resident Inspector
U.S. Nuclear Regulatory Commission
Post Office Box 298
Shippingport, PA 15077

FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
ATTN: R. G. Mende, Director
  Work Management (BV-IPAB)
Post Office Box 4
Shippingport, PA 15077

FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Mr. B. F. Sepelak
Post Office Box 4, BV-A
Shippingport, PA 15077